

U.S. Patent Application No. 09/475,385  
Supplemental Amendment After Final dated March 19, 2004  
Reply to Office Action dated April 22, 2003

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claims 1-19 (canceled)

Claim 20. (currently amended) The method of claim 40 51, wherein said organic group is  $(\text{C}_6\text{H}_4)\text{-SO}_3\text{Na}^+$ ,  $(\text{C}_6\text{H}_4)\text{-SO}_3\text{Li}^+$ , or  $(\text{C}_6\text{H}_4)\text{SO}_3\text{K}^+$ .

Claim 21. (currently amended) The method of claim 40 51, wherein said organic group is  $\text{p-C}_6\text{H}_4\text{SO}_2\text{NH}_2$  or  $\text{-C}_6\text{H}_4\text{NH}_2$ .

Claim 22. (currently amended) The method of claim 40 51, wherein said organic group is hydrophilic.

Claim 23. (currently amended) The method of claim 40 51, wherein said adsorbate is polar.

Claim 24. (currently amended) The method of claim 40 51, wherein said adsorbate is water, ammonia, carbon dioxide, hydrogen sulfide, argon, oxygen, or methane.

Claim 25. (original) The method of claim 24, wherein said adsorbate is water.

Claims 26-38 (canceled)

Claim 39. (currently amended) A The method of claim 51, to adsorb an adsorbate comprising contacting said adsorbate with a modified carbonaceous material capable of adsorbing said adsorbate wherein said modified carbonaceous material comprises at least one organic group attached to a carbonaceous material, wherein said organic group comprises an aromatic group or a

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~~C<sub>1</sub>-C<sub>12</sub> alkyl group directly attached to the carbonaceous material, with the proviso that said carbonaceous material is not activated carbon,~~ wherein said organic group is substituted with the functional group having the formula R, OR, COR, COOR, OCOR, a carboxylate salt, halogen, CN, NR<sub>2</sub>, SO<sub>3</sub>H, a sulfonate salt, OSO<sub>3</sub>H, a OSO<sub>3</sub><sup>-</sup> salt, NR(COR), CONR<sub>2</sub>, NO<sub>2</sub>, PO<sub>3</sub>H<sub>2</sub>, a phosphonate salt, a phosphate salt, N=NR, NR<sub>3</sub><sup>+</sup>X<sup>-</sup>, PR<sub>3</sub><sup>+</sup>X<sup>-</sup>, S<sub>k</sub>R, SSO<sub>3</sub>H, a SSO<sub>3</sub><sup>-</sup> salt, SO<sub>2</sub>NRR', SO<sub>2</sub>SR, SNRR', SNQ, SO<sub>2</sub>NQ, CO<sub>2</sub>NQ, S-(1,4-piperazinediyl)-SR, 2-(1,3-dithianyl) 2-(1,3-dithiolanyl), SOR, or SO<sub>2</sub>R, wherein R and R', which are the same or different, are independently hydrogen, branched or unbranched C<sub>1</sub>-C<sub>20</sub> substituted or unsubstituted, saturated or unsaturated hydrocarbon, k is an integer ranging from 1-8, anion X<sup>-</sup> is a halide or an anion derived from a mineral or organic acid, Q is (CH<sub>2</sub>)<sub>w</sub>, (CH<sub>2</sub>)<sub>x</sub>O(CH<sub>2</sub>)<sub>z</sub>, (CH<sub>2</sub>)<sub>x</sub>NR(CH<sub>2</sub>)<sub>z</sub>, or (CH<sub>2</sub>)<sub>x</sub>S(CH<sub>2</sub>)<sub>z</sub>, where w is an integer from 2 to 6 and x and z are integers from 1 to 6, wherein said hydrocarbon is alkyl, alkenyl, alkynyl, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl, substituted or unsubstituted alkylaryl, or substituted or unsubstituted arylalkyl.

Claim 40. (currently amended) A The method of claim 51, ~~to adsorb an adsorbate comprising contacting said adsorbate with a modified carbonaceous material capable of adsorbing said adsorbate wherein said modified carbonaceous material comprises at least one organic group attached to a carbonaceous material, wherein said organic group comprises an aromatic group directly attached to the carbonaceous material, with the proviso that said carbonaceous material is not activated carbon,~~ wherein said organic group is an aromatic group having the formula A<sub>y</sub>Ar-, wherein Ar is an aromatic radical and A is a substituent on the aromatic radical, and y is an integer from 1 to the total number of -CH radicals in the aromatic radical.

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Claim 41. (previously presented) The method of claim 40, wherein the substituent A is a linear, branched, or cyclic hydrocarbon radical.

Claim 42. (previously presented) The method of claim 40, wherein the substituent A is a linear, branched, or cyclic hydrocarbon containing 1 to 20 carbon atoms.

Claim 43. (previously presented) The method of claim 40, wherein said Ar is phenyl, naphthyl, anthracenyl, phenanthrenyl, biphenyl, pridinyl, benzothizdiazolyl, or benzothiazolyl.

Claim 44. (previously presented) The method of claim 40, wherein the substituent A is a linear, branched, or cyclic hydrocarbon containing 1 to 20 carbon atoms and Ar is phenyl, naphthyl, anthracenyl, phenanthrenyl, biphenyl, pyridinyl, benzothiadiazolyl, or benzothiazolyl.

Claim 45. (currently amended) A The method of claim 51, to adsorb an adsorbate comprising contacting said adsorbate with a modified carbonaceous material capable of adsorbing said adsorbate wherein said modified carbonaceous material comprises at least one organic group attached to a carbonaceous material, wherein said organic group comprises an aromatic group or a C<sub>1</sub>-C<sub>12</sub> alkyl group directly attached to the carbonaceous material, with the proviso that said carbonaceous material is not activated carbon, wherein said organic group is a C<sub>1</sub>-C<sub>12</sub> alkyl group having at least one acidic group having a pKa of less than 11 or at least one salt of an acidic group having a pKa of less than 11, or a mixture thereof.

Claim 46. (previously presented) The method of claim 40, wherein there is more than one type of organic group attached to said carbonaceous material.

Claim 47. (cancelled)

Claim 48. (previously presented) The method of claim 39, wherein there is more

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than one type of organic group attached to said carbonaceous material.

Claim 49. (previously presented) The method of claim 40, wherein some of the carbonaceous material has been modified with one organic group and another portion of the carbonaceous material has been modified with a different organic group.

Claim 50. (canceled)

Claim 51. (previously presented) A method to adsorb an adsorbate comprising contacting said adsorbate with a modified carbonaceous material capable of adsorbing said adsorbate wherein said modified carbonaceous material comprises at least one organic group attached to a carbonaceous material, wherein said organic group comprises an aromatic group or a C<sub>1</sub>-C<sub>12</sub> alkyl group directly attached to the carbonaceous material, with the proviso that said carbonaceous material is not activated carbon, wherein said carbonaceous material is obtained by the pyrolysis of fuel oil or polymeric precursors.